

## Area Seminar

Title Elasto plastic response of reversibly crosslinked biopolymer bundles

Date and Time 11/12/2014 16:00:00

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Area Theoretical Physics

Venue Room No. 469

Abstract We study the response of crosslinked F-actin bundles to driving forces through a simple analytical model. Two failure modes under load can be defined. Brittle failure is observed when crosslinks suddenly and collectively unbind, leading to catastrophic loss of bundle integrity. During ductile failure, on the other hand, bundle integrity is maintained, however at the cost of crosslink reorganization and defect formation. We present phase diagrams for the onset of failure, highlighting the importance of the crosslink stiffness. We evidence how the introduction of defects can lead to complex elasto-plastic relaxation processes, once the force is switched off. Depending on, both, the time-scale for defect motion as well as the crosslink stiffness, bundles can remain in a quasi-permanent plastically deformed state for a very long time.